

SEVERE LOCAL STORMS, OCTOBER, 1923.

(The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A more complete statement will appear in the Annual Report of the Chief of Bureau.)

Place.	Date.	Time.	Width of path (yards).	Loss of life.	Value of property destroyed.	Character of storm.	Remarks.	Authority.
Louisiana and adjacent Gulf coast.	15-17	.....	.....	.....	\$19,300	High winds and tides.	Damage principally to crops and immovable property, such as docks, piers, wharves, etc. Serious interruption to maritime traffic.	Advertiser (Montgomery, Ala.) Official, U. S. Weather Bureau.
Chicago, Ill.	17-18	.....	.....	.....	.....	Moderate gale.	Slight property damage. Two persons injured.	Official, U. S. Weather Bureau. Daily Journal (Chicago, Ill.).
Coney Island, N. Y.	18	P. m.	.....	2	.....	High wind.	Fishing smack <i>Halcyon</i> wrecked. Survivors brought ashore after hard fight.	Times (New York).
Middle Atlantic coast.	22-24	.....	.....	.....	.....	High winds and rain.	Shipping activities paralyzed; some damage to small craft and a number of persons injured.	Official, U. S. Weather Bureau. The Evening World (New York).
Cleveland, Ohio.	24	A. m.	.....	.....	.....	Gale and rain.	Trees uprooted, wires and windows broken and shipping delayed. Several accidents.	News (Cleveland, Ohio).

STORMS AND WEATHER WARNINGS.

WASHINGTON FORECAST DISTRICT.

The weather conditions over the States east of the Mississippi River during the first two weeks of the month were dominated practically the entire time by an area of high pressure of great magnitude that moved very slowly southeastward from Manitoba to the Atlantic States. However, after the 9th pressure gradually decreased over the western Caribbean Sea, Mexico, and the southwestern Gulf of Mexico and there were torrential rains in portions of Mexico. At Acapulco, over 19 inches of rain fell within six days. By the 14th the barometer was falling slowly along the Texas coast, and on the morning of the 15th a disturbance of moderate intensity extended all the way from Vera Cruz and Frontera, Mexico, northward over the western Gulf of Mexico to the Texas and Louisiana coasts, with the center apparently some distance east of the mouth of the Rio Grande. This disturbance, in connection with the area of high pressure over the eastern States, produced a rather steep pressure gradient, so that small-craft warnings were ordered displayed along the Mississippi, Alabama, and northwestern Florida coasts at 10 a. m. At 12:30 p. m. the district forecaster at New Orleans ordered southeast storm warnings on the Louisiana coast and northeast warnings on the Texas coast.

The regular evening reports from the stations along the Gulf coast showed that the disturbance had increased considerably in intensity during the day and that it was moving northward toward the Louisiana coast. At 8:45 p. m. the display stations along the east Gulf coast from Bay St. Louis, Miss., to Cedar Keys, Fla., were ordered to hoist northeast storm warnings at 9:30 p. m. Shortly after this order was telegraphed to the stations concerned, radio reports were received from the S. S. *El Siglo* in lat. 28° 20' N., long. 92° W., and from the S. S. *Corning* in lat. 27° 20' N., long. 91° 30' W., indicating that the storm had developed hurricane intensity. The former reported a barometer reading of 29.22 inches and a wind velocity of 74 miles an hour from the east, and the latter a barometer reading of 29.18 inches and a wind velocity of 64 miles an hour from the east, with a two-hour pressure fall of 0.20 inch. As soon as these extremely important and timely vessel reports were charted and the storm center located at about lat. 27° N., long. 92° W., hurricane warnings were ordered displayed at 10 p. m. along the Louisiana, Mississippi, Alabama, and extreme northwestern Florida coasts. Ten p. m. and midnight special observations were called for from several of the stations along the Gulf coast, and an advisory

message was issued at 12:45 a. m. of the 16th informing the stations in the area affected that the storm center would likely reach the Louisiana coast not far from Morgan City between 4 and 6 a. m. The lowest pressure noted at Morgan City was 29.25 inches. The hurricane, which was of small diameter and not of great intensity, moved quite rapidly northward and its center was a short distance southwest of Vicksburg, Miss., at 8 a. m., this station reporting a barometer reading of 29.32 inches with a two-hour pressure fall of 0.20 inch and a wind velocity of 32 miles an hour from the southeast.

Extracts from press reports of the storm in the Times-Picayune, New Orleans, are as follows:

PENSACOLA, FLA., Oct. 16.—* * * Aside from the dragging of anchors by several tank ships anchored here, damage was confined in the harbor to the beaching of a number of loaded lumber and naval stores barges. Five hundred barrels of rosin were on one barge which went down. An even dozen barges were beached, more than half of them carrying lumber, and cargoes were scattered all along the beach and more or less damaged. * * *

GULFPORT, MISS., Oct. 16.—* * * Shipping in the Gulfport Harbor escaped damage, all the larger vessels remaining safely moored * * * but some of the trawl boats and other small craft which sought refuge in the basin were either sunk or driven on the beach. * * *

The highest wind velocities reported, all from the southeast, were as follows: New Orleans, La., 36 miles an hour; Burrwood, La., 48; Mobile, Ala., 60; and Pensacola, Fla., 64.

Pressure remained quite low over the Gulf of Mexico after the hurricane moved inland, and the barometer again fell over the western Caribbean Sea, and there was evidence that a disturbance was forming between the Island of Jamaica and the Isthmus of Panama. At 5:30 p. m. of the 17th southeast storm warnings were ordered displayed from Bay St. Louis, Miss., to Apalachicola, Fla., as another disturbance was approaching the middle Gulf coast. At 8 p. m. its center was between Mobile and New Orleans, and shortly thereafter a maximum wind velocity of 44 miles an hour from the southeast was registered at Mobile and 56 miles an hour from the southeast at Pensacola. This storm moved rapidly northward to the middle Mississippi Valley, then north-northeastward to the Hudson Bay region.

Over the western Caribbean Sea pressure continued low with some evidence of a slight disturbance central southwest of Jamaica. Following a slight rise in pressure over the western Caribbean Sea, Cuba, and the vicinity of the Bahama Islands on the 20th, the barometer again began to fall over Cuba and the Bahamas region during the 21st, and by the morning of the 22d a disturbance of slight intensity had developed with its center near Nassau, Bahama Islands. At this time there was an area of high pressure of great magnitude overlying all

sections from the Rocky Mountains eastward to the Atlantic coast and there was a steep barometric gradient along the coast from North Carolina northward. At 9:30 a. m. northeast storm warnings were displayed from Cape Hatteras to Boston, Mass. The disturbance increased gradually in intensity and moved almost due northward until it reached Cape Hatteras, after which it moved north-northwestward with slowly diminishing intensity to eastern Lake Erie where it was centered the evening of the 24th. It now recurved and moved northeastward down the St. Lawrence Valley. On the morning of the 23d the northeast warnings were extended northward to Eastport, Me., and southward to Wilmington, N. C. Severe gales prevailed during the 23d between Cape Hatteras and Cape Cod, several stations reporting maximum wind velocities of from 56 to 60 miles an hour, and at Atlantic City, N. J., 82 miles an hour from the northeast was registered.

A disturbance of slight intensity appeared north of St. Thomas, West Indies, on the morning of the 15th and it moved almost directly northward until it reached the vicinity of Bermuda, after which it moved northwestward to Massachusetts, its center passing almost directly over Boston on the morning of the 19th. During the day, this storm dissipated. Storm warnings were displayed from Delaware Breakwater to Eastport, Me., on the 18th when the storm was centered some distance southeast of Nantucket, Mass. The highest wind velocity reported was 48 miles an hour from the northeast at Nantucket.

The last storm warnings of the month were displayed the morning of the 30th in connection with a disturbance that developed suddenly during the preceding night and was central over Lake Erie at 8 a. m. This storm increased considerably in intensity and moved rapidly down the St. Lawrence Valley. The highest wind velocity reported was 44 miles an hour from the southwest at Block Islands, R. I.

Small-craft warnings were displayed on a number of dates, mostly along the south Atlantic and east Gulf coasts, and warnings of strong northerly winds were sent to the Chief Hydrographer, Panama Canal Zone, on the 21st and 25th.

Frost warnings were issued frequently during the month, but were mostly for the northerly sections until the 20th. On the 25th light frost was reported as far south as Mobile, Ala., and Jacksonville, Fla.—*Charles L. Mitchell.*

CHICAGO FORECAST DISTRICT.

With one or two notable exceptions the movement of weather conditions in the Chicago Forecast District in October, 1923, was decidedly sluggish. High pressure areas were dominant most of the month, and these lingered over the Great Lake region or the Eastern States for days at a time and obstructed the normal eastward advance of conditions from the West. Perhaps the most striking example of this occurred in connection with the southeastward spread of a rain area from the Northern Plains States. Five days were consumed in its passage from North Dakota to central Indiana, and almost 48 hours from northwestern Illinois to central Indiana.

Frost warnings.—Frost warnings for some part of the district were issued almost daily during the month. With the advance of killing frost southward the area where warnings were needed became more and more restricted until by the close of the month only the extreme southern portions of Kansas and Illinois remained in

that category. The most general frost warnings were issued on the 4th, 5th, 12th, 13th, 14th, 19th, 20th, and 21st. The principal frosts in the Great Lakes region and adjacent areas occurred between the 5th and 8th, in the Plains States on the 13th, and in the Great Central valleys between the 19th and the 23d.

Cold-wave warnings.—On the 29th a disturbance developed over the Southern Plains, and during the next 24 hours moved with great rapidity northeastward to the mouth of the St. Lawrence River. Closely following the disturbance was a marked high pressure area from the northwest, with temperatures decidedly low for the season. At Valentine, Nebr., a minimum of 4° occurred on the 30th, the lowest of record at that station so early in the season. On the morning of that date cold-wave warnings were issued for the extreme southeastern portion of the district, and these were, for the most part, verified. At Evansville, Ind., the temperature fell from 56° to 28°, the latter figure being the lowest of record for the month of October.

Storm warnings.—During the first half of the month the weather on the Great Lakes was quiet, but thereafter conditions were much more active. On the 17th a disturbance that had moved up the Mississippi Valley from the Gulf of Mexico appeared to call for southeast warnings, and accordingly these were displayed on all the Lakes, except extreme western Superior. The warnings at most points were lowered a few hours later, however, when special observations showed that the storm was decreasing in strength. But quickly following this disturbance was another of similar origin, and on the morning of the 18th it was central near the mouth of the Ohio River, with a central pressure of 29.40 inches. Northeast warnings were displayed at that time on Lake Michigan, and southeast warnings on the Lower Lakes. From Cairo the storm took a north-northeast course, crossing the Great Lakes and disappearing from the region of observation in the direction of James Bay. Additional warnings for this storm were displayed on the afternoon of the 18th on extreme eastern Superior, and the southeast warnings were continued at that time on Lake Huron. On the following morning the northwest warnings were continued on the eastern shore of Lake Michigan, changed to northwest on Lake Huron and western Lake Erie, and to southwest on eastern Lake Erie and Lake Ontario, and northwest warnings were issued for the Houghton and Marquette districts of Lake Superior. The warnings for the storm were verified at most stations.

The next storm warning to be displayed was that on the night of the 23d, in connection with a disturbance from the South Atlantic which at that time was moving inland in a north-northwest direction from the Virginia coast. Northeast warnings were issued for the lower Lakes and on the following morning these were extended to Lake Huron. At the same time northwest warnings were hoisted on Lake Superior and northern Lake Michigan. In the afternoon the warnings were changed to northwest on Lake Huron and western Lake Erie and to southwest over the remainder of the lower Lakes. On the evening of the 24th the storm began to recurve to the northeastward over Lake Erie with decreased energy, finally disappearing two days later over the Canadian Maritime Provinces. For the most part the warnings were verified; at Cleveland, Ohio., a maximum velocity of 56 miles an hour from the northeast was attained.

The last storm warning issued during the month was that of the 30th in connection with the disturbance re-